UNITED STATES DEPARTMENT OF C MMERCE
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SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
08/169,127	12/20/93	SHINOHARA H	0756945

A1M1/0501
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EXAMINER	
PADGETT	
ART UNIT	PAPER NUMBER
1112	25

DATE MAILED: 05/01/96

attached
Please find ~~below~~ a communication from the EXAMINER in charge of this application.

Commissioner of Patents

(15) By applicant's explicit amendments to the claims despite previous comments in the last action, the examiner must assume that the applicants actually do intend to describe the shape of the laser beam, NOT THE BEAM SPOT, when they claim the laser beam as being "line-shaped". For the record the examiner notes that the laser beam is defined by the whole path made by the light emitted from the laser, and to describe it as "line-shaped" only gives a 2-D description for a 3-D phenomenon, hence has only minimal meaning, as in almost any situation, some set of dimensions of a laser beam may be considered line-shaped by definition. It is noted that the beam spot made by the beam of Fig. 8 would be line-shaped. It is also noted, that while it is NOT being claimed (as written), a beam spot is the cross-section of a laser beam, which is not at all what applicants have claimed, as laser beam and the beam spot, ie the shape made by the beam when it impings on an object, are not at all the same thing. The examiner hopes these comments are helpful because she does not believe that applicants have clarified their claims as intended, as represented by the comments on p. 4, of the response.

(16) Applicants' information disclosure of 3/6/95 is made of record, however.

(17) The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section

102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

(18.) Claims 1-16 are rejected under 35 U.S.C. § 103 as being unpatentable over Yamazaki et al (358) alone or in view of Yamazaki et al (855) and Toshiba KK or NEC Corp (131) or (123) or Traskos et al or Hongo et al or Krimmel et al.

Yamazaki et al (358) teaches forming a pattern on a coated substrate (ie. treating an object) via irradiation with an excimer laser beam shaped through a mask which removes portions to shape the beam and pattern (abstract). It is disclosed that excimer laser beams generally emit a beam with a rectangular cross-section (col. 2, lines 40-41). The beam is first treated by an expander, contracted by a convex cylinderial lense made of artificial quartz and shaped by a mask (Fig. 1 and col. 2, lines 30-45). The mask is used to remove edge portions of the expanded rectangular beam which already would make a rectangular or linear beam spot (although such is not actually claimed by applicants) and is narrowed after shaping (col. 2, lines 55-60; col. 3, lines

8-47 and Fig. 2, and claims 5 and 8). Figure 1 shows the mask after the converging lens, but discussion on the ~~Sue~~ use of the mask refers only to treating the expanded beam without regard to the converging lens and it is further noted that claim 15 has a shaping step before the contracting step, but there are obvious logic errors in the logic of this claim as lines 5 and 8 are identical and the shaping of line 5 can only logically be applied to the expanded laser beam, as the contracting step comes after it. Hence Yamazaki et al (359) implies applicant's placement of the mask with respect to the converging lens, but never explicitly states it. Given the teaching on placing the mask in the expanded beam, it would have been obvious to place it before the converging lens, especially for such shaping as is standardly done with a collimator, where the outer edges which may be significantly less in intensity are removed and the beam is shaped to give a clear spot or more uniform intensity.

Alternately, the references of Toshiba KK (fig. 3), Nec Corp (131) or (123) or Traskos et al or Hongo et al or Krimmel et al (the US patent has the German patent as a priority document) all show the use of a mask or collimator before a converging lens. Note that the shape of the lens shown in the figures has a characteristic shape, hence convex or converging need not be stated if the figure is appropriate. Note lens shape in Toshiba KK, NEC Corp. (131-uses pulsed beam and a slit to shape the beam before the

converging lens as shown in Figs. 1, 2 and 3, described in abstract and p. 9; 123 - Fig. 3 shows slit then converging lens with beam shape and abstract includes semiconductor as substrates), and Hongo et al (Fig. 1 - has beam shape and controlled slit and turns a corner).

The references of Krimmel et al and Traskos et al show more complex patterning. Traskos et al, fig. 1, shows the mask before the converging lens and discusses use of masks as shown, or on the other side of the lens (on substrate) in col. 2, lines 56-66. Krimmel et al in figs. 1 and 3 shows a mask before a convex shaped lens, either before or after directing the beam in an orthoganol direction. Discussion of Fig. 1 beam path can be found on Col. 4, lines 47-65, and lines 65-68 state that further description of beam path details are not required because they are sufficiently known to those skilled in the art of optical imaging.

From any one of the teachings of masks or slits it would have been obvious to one of ordinary skill in the art, to use Yamazaki et al (358)'s mask before the converging lens because it is shown to be a well known and standard technique, especially since is also implied in (358).

Yamazaki et al (358) also teach a movable table (25) which can be used to cause scanning as claimed with respect to the impingement direction (col. 3, lines 3-7 and claims 6 and 9).

Yamazaki et al (358) does not teach directing the condensed beam in a direction orthognal (perpendicular) to the original or first beam direction and it discusses patterning a conductive coating, exemplified by the metal oxide, indium tin oxide, instead of semiconductor surfaces. First, since the claimed treating has no particular object or effect, what substrate is treated is essentially irrelevant because it is well known and conventional to "treat" conductive, semiconductive or insulating surfaces with laser beams for various effects, such as cleaning, coating or etching. Furthermore, while there is NO patterning required by applicants claims, it is well known to pattern any of the above categories as exemplified by the integrated circuit and semiconductor device arts, and the particular pattern effected (beam spot shape) is a matter of design choice.

As for turning the beam perpendicular, as with mirrors (reflectors), this is a conventional procedures which may be motivated by reasons such as chamber, window and substrate geometry. Proper mirror placement can cause orthogonal orientation without changing the beam shape, hence is considered an obvious variation of Yamazaki et al (358's) linear (direct beam path) arrangement.

Alternately, Yamazaki et al (855) is cited for showing both the orthoganol orientation for the converging beam(s) and laser patterning of either a conductive (col. 5, line 7- col. 6, line

9) or semiconductive layer (col. 6, line 33- col. 7, line 10). It would have been obvious to apply these techniques of (855) to (358) because the same conductor layers are taught to be treated for the same purpose (patterning, esp. lines - abstract; col. 3, lines 28-39), the same type of beams are used (excimer - col. 4, line 64-col. 5, line 5) and the same diverging then converging sequence (Fig. 5, col. 5, lines 9-23), making the teaching analogous.

19. Yamazaki et al (518) is considered equivalent to (855) for purposes of the rejection.

Other art that was made of record excluded Hideaki Iwano, NEC Corp (973), Misao Saga and Oprysko et al, with more beam paths of interest. Zander et al and Bosch et al with explicit showing and teaching of the beam shape of interest, and Sekine et al, Stafast et al (DR) and the Japanese NEC Corp references (963), (233) and (449) with assorted patterning techniques using various masking arrangements.

20. The chain of priority documents and addition of the new priority document 61-229,252 from 9/26/86 is acknowledged. The Yamazake reference (385) is for Nov. 1988, filed 8/7/87 however applicants have filed two CIP's not just 07/288,186 of 12/22/88. Note both CIP are filed after the issue date of the patent applied in the rejection. Applicants must show that all information in the claims is from the original, ie first priority document provided

by applicants, or it can not provide the priority for the claims and the claims that remain in questionable form as discussed in section 15.

21. Applicant's arguments filed 3/6/95 and discussed above have been fully considered but they are not deemed to be persuasive.

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. § 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

23. Any inquiry concerning this communication should be directed to M. L. Padgett at telephone number (703) 308-2336.

Marianne Padgett

MARIANNE PADGETT
PRIMARY EXAMINER
GROUP 1100

MLPadgett:dw
June 04, 1995